2001 GYPSY MOTH SUPPRESSION PROJECT SUMMARY

at

CHESAPEAKE MARSHLANDS NATIONAL WILDLIFE REFUGE COMPLEX

Report by:

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Between April 26 and May 1, 2001, approximately 1,713 acres at Chesapeake Marshland National Wildlife Refuge Complex were aerially treated to reduce gypsy moth populations and to prevent defoliation.

The biological insecticide *Bacillus thuringiensis* variety *kurstaki* (*B.t.k.*) was applied undiluted at the rate of 96 ounces per acre per application. A single application was applied on 274 acres while a double application was applied on 1,439 acres. The formulation of *B.t.k.* used was Foray® 48F.

A rotary-winged aircraft equipped with a Differential Global Positioning System (DGPS) was used to apply the insecticide.

This report documents the spray equipment, insecticide, meteorological conditions, foliage and larval development, and spray coverage for the project. Treatment efficacy will be reported once defoliation surveys are conducted in June and egg mass surveys are completed this fall.

Aircraft and Spray Equipment

Contractor:	Helicopter Applicators, Inc.
Aircraft:	Bell 205
FAA Number:	N658HA
Pilot:	Glenn Martin
DGPS Brand:	AG-NAV
Spray System:	Simplex
Nozzle Type:	AU 5000 Micronairs
Number of Nozzles:	8
Blade Angle:	55°
VRU Setting:	9
Application Rate:	96 ounces/acre
Boom Pressure:	36 psi
Air Speed:	85 mph
Swath Width:	125 feet
Flow Rate:	16.1 gpm (calculated) 15.8 gpm (actual)

Meteorological Conditions

Date	Time	Temperature Range	RH Range	Wind Speed Range	Wind Direction
4/26	1930–1954	51 – 55° F	40–50%	2–3 mph	E
4/27	0600–1005	39 – 62° F	40– 88%	0–6 mph	SW
4/30	0600–0745	48 – 52° F	80– 90%	1–4 mph	SW
5/1	0550–0915	53 – 65° F	61– 90%	0–5 mph	S

A detailed report of weather conditions is enclosed in Appendix A.

Foliage and Larval Development

Date	Foliage Development		Larval Development	
4/26 and 4/27	willow oak	80-90%	98%	first instar
	white oak	20-25%	2%	second instar
	red oak	30-35%		
	swamp chestnut oak	30-40%		
4/30 and 5/1	willow oak	100%	66%	first instar
	white oak	30-40%	34%	second instar
	red oak	45-50%		
	swamp chestnut oak	45-50%		

Spray Coverage

Based on observations made by personnel in the treatment blocks and by viewing the AG-NAV printouts (Appendix B), spray coverage was excellent. There were no significant skips in any of the treatment blocks and very little area outside of the treatment blocks were sprayed.

Narrative

This suppression project was divided into eighteen treatment areas (Figure 1). The project was staged from the permanent helispot located east of the fire administration building (Figure 1).

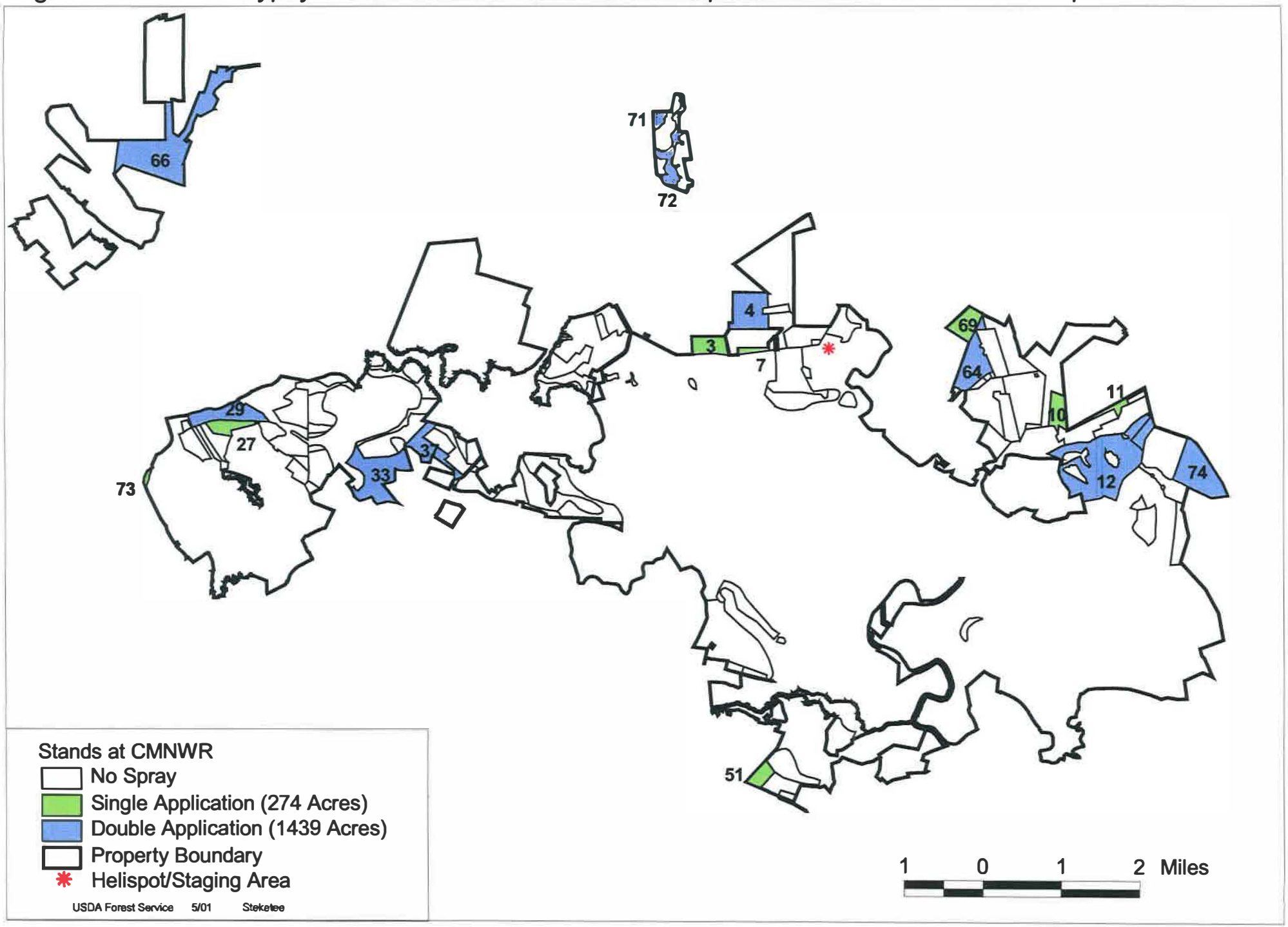
Treatment commenced on the evening of April 26 at 1925 and was terminated at 2000 due to darkness. Block 74 and approximately 39 acres in block 64 were treated. Treatment acres for the day were approximately 183 acres.

Treatment resumed on the morning of April 27 at 0551 and was terminated at 1007 due to low relative humidity. The remainder of block 64 was treated along with blocks 12, 4, 71, 72, 66, 27, 37, 35, 29 and 73. The first application was now complete in all the double application blocks. Application was complete in blocks 27 and 73, two out of the eight single application blocks. A total of 1,300 acres was treated for the day.

No treatments were planned or conducted on April 28 and 29. This allowed for further larval and foliage development in the remaining single applications blocks prior to treatment and also allowed for the targeted 4-6 days between treatments in the double application blocks.

Treatment resumed on April 30 at 0558. The remaining six single application blocks (3, 7, 51, 69, 10 and 11) were treated along with the second application in blocks 64 and 74. A total of approximately 484 acres was treated for the day. Although favorable weather conditions existed at 0747 when these eight blocks were completed, the second application in the remaining double application blocks was delayed for one day to allow four days between applications.

Figure 1. -- 2001 Gypsy moth treatment blocks at Chesapeake Marshlands NWR Complex.



Treatment resumed on May 1 at 0548 and was completed by 0920. The second application was applied in blocks 12, 4, 71, 72, 35, 87, 29 and 66. Approximately 1,185 acres were treated for the day. The project was now complete. The daily sortie reports are enclosed in Appendix C.

A grand total of approximately 3,152 acres was sprayed at Chesapeake Marshland National Wildlife Refuge Complex in 2001. Both the applications went well with no accidents or incidents. Treatment timing based on larval and foliage development was excellent.

No problems were encountered with the spray equipment, ground support equipment and/or personnel provided by the contractor, Helicopter Applicators, Inc. The production rate of 317 acres per hour exceeded the minimum rate required in the contract of 250 acres per hour.

As stated previously, treatment efficacy will be evaluated through a defoliation survey conducted in June and an egg mass survey this fall. The suppression project will be considered successful if the goals of preventing noticeable defoliation on less that 20 percent of the treatment area and reducing residual gypsy moth populations below the treatment threshold on at least 80 percent of the treatment area.

APPENDIX A

METEOROLOGICAL CONDITIONS

DURING TREATMENT

Meteorological Conditions During Treatment

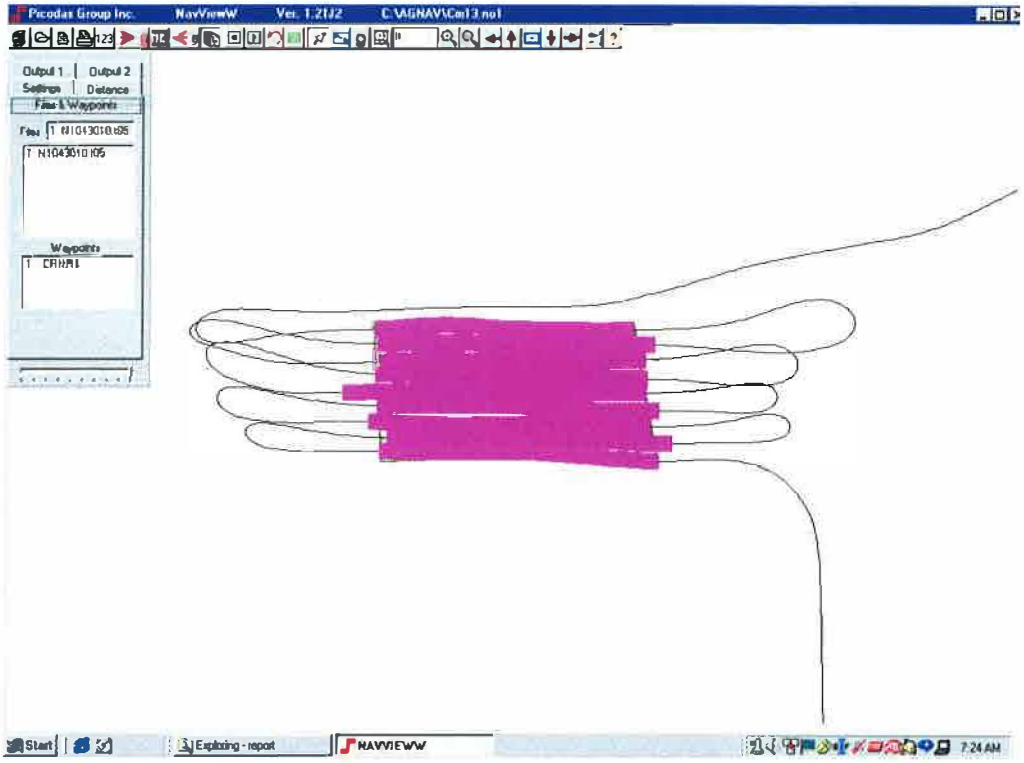
Date	Time	Temperature	RH	Wind Speed	Wind Direction
4/26	1930	55° F	40%	2-3mph	E
4/26	1954	51° F	50%	0	--
4/27	0600	39° F	88%	0	--
4/27	0630	40° F	87%	0	--
4/27	0705	43° F	90%	0	--
4/27	0755	48° F	85%	0	--
4/27	0830	52° F	68%	1-2	SW
4/27	0900	54° F	62%	1-2	SW
4/27	0920	57° F	50%	2-4	SW
4/27	0950	61° F	42%	2-4	SW
4/27	1005	62° F	40%	3-6	SW
4/30	0600	48° F	90%	1	SW
4/30	0637	49° F	89%	1	SW
4/30	0705	50° F	87%	2	SW
4/30	0730	52° F	84%	2-3	SW
4/30	0745	52° F	80%	2-4	SW
5/1	0550	53° F	86%	1	S
5/1	0630	53° F	90%	0	--
5/1	0715	58° F	77%	1	S
5/1	0815	60° F	73%	2-3	S
5/1	0845	61° F	70%	1-2	S
5/1	0915	65° F	61%	3-5	S

APPENDIX B

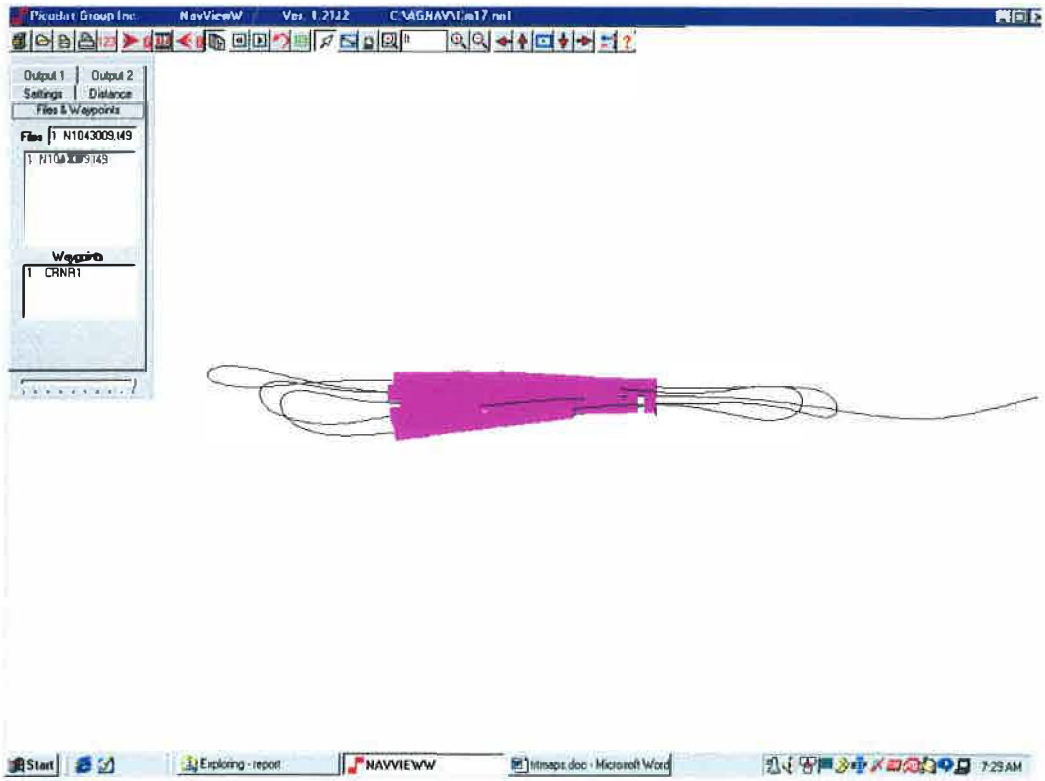
AG-NAV PRINTOUTS

Note: AG-NAV printouts for block 73 and the second application in block 35 were not presented in this appendix because the treatment files for these two blocks were not on the downloaded treatment disks. However, treatment in both of these blocks was verified by Forest Service personnel located in or adjacent to the blocks during treatment.

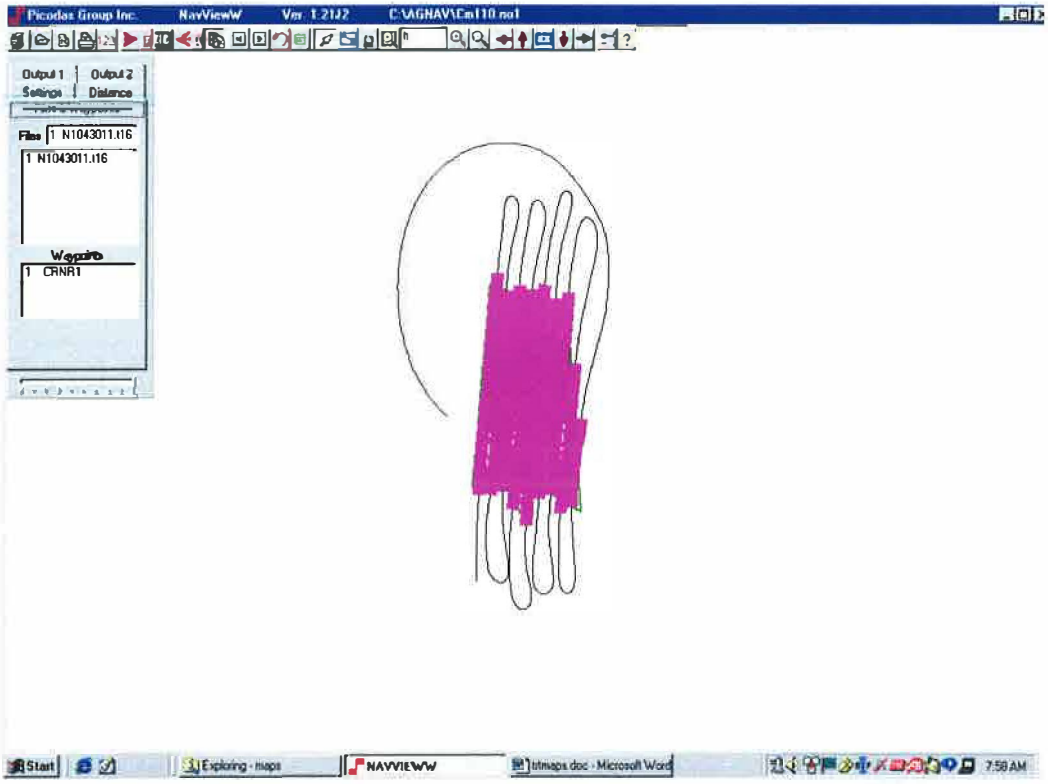
Chesapeake Marshlands NWR Complex Gypsy Moth Suppression Project
Block 3 – single application – April 30, 2001.



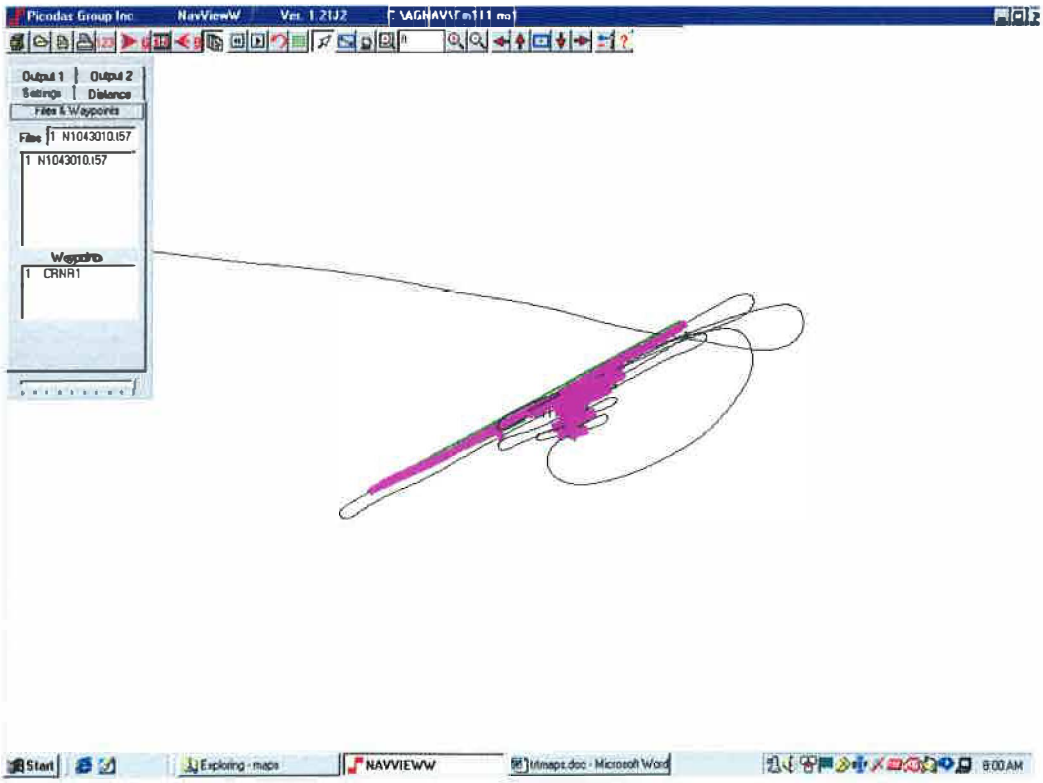
Chesapeake Marshlands NWR Complex Gypsy Moth Suppression Project
Block 7 – single application – April 30, 2001.



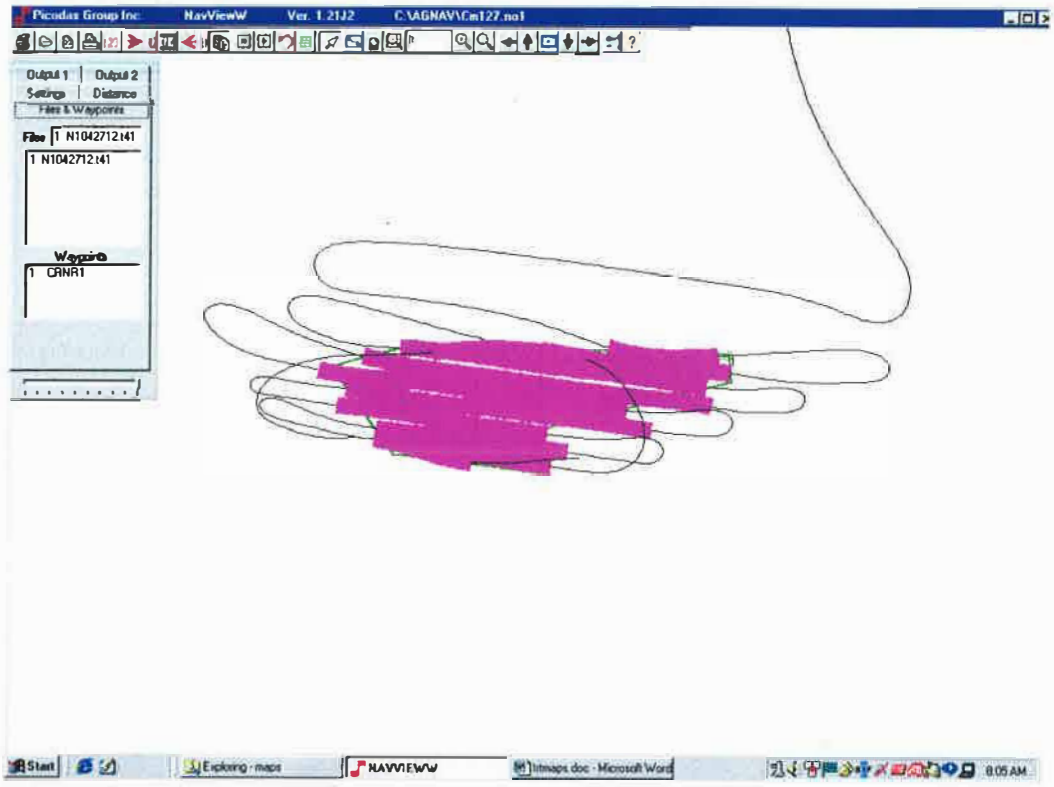
Chesapeake Marshlands NWR Complex Gypsy Moth Suppression Project
Block 10 – single application – April 30, 2001.



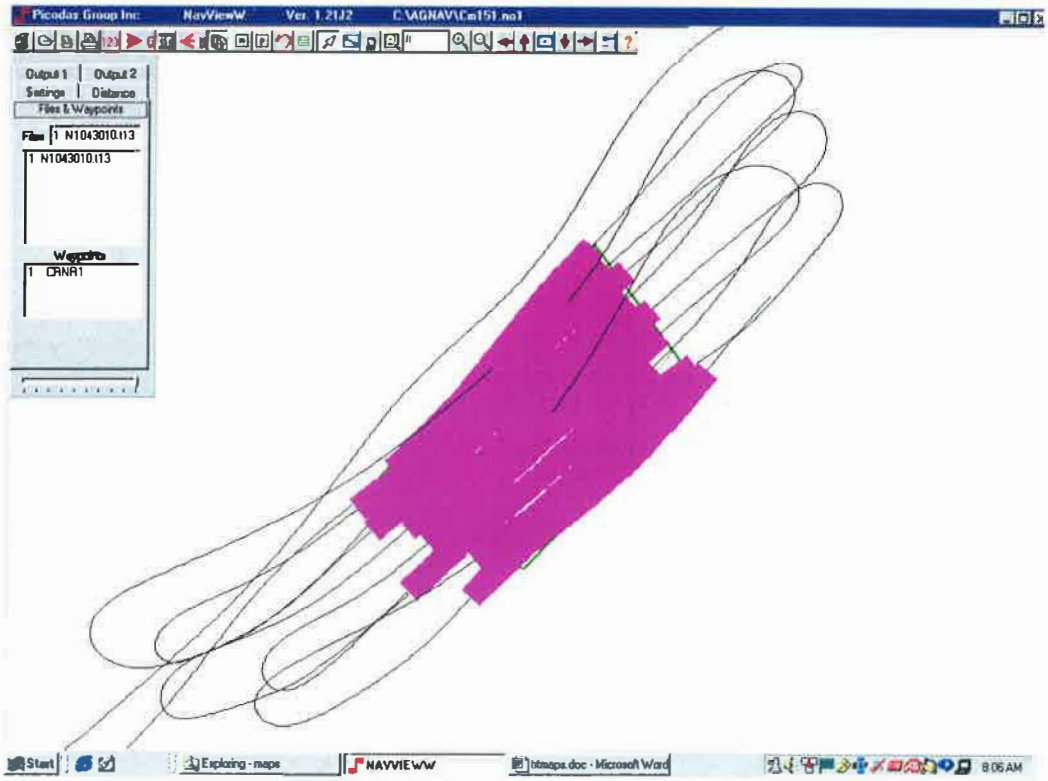
Chesapeake Marshlands NWR Complex Gypsy Moth Suppression Project
Block 11 – single application – April 30, 2001.



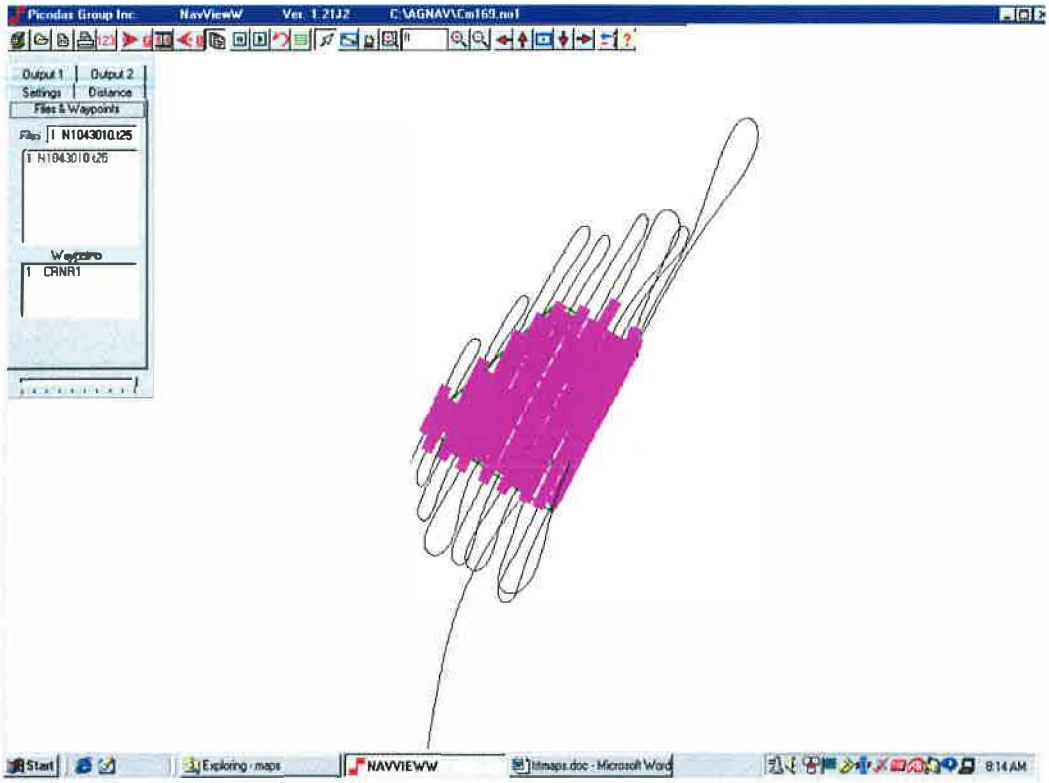
Chesapeake Marshlands NWR Complex Gypsy Moth Suppression Project
Block 27 – single application – April 27, 2001.



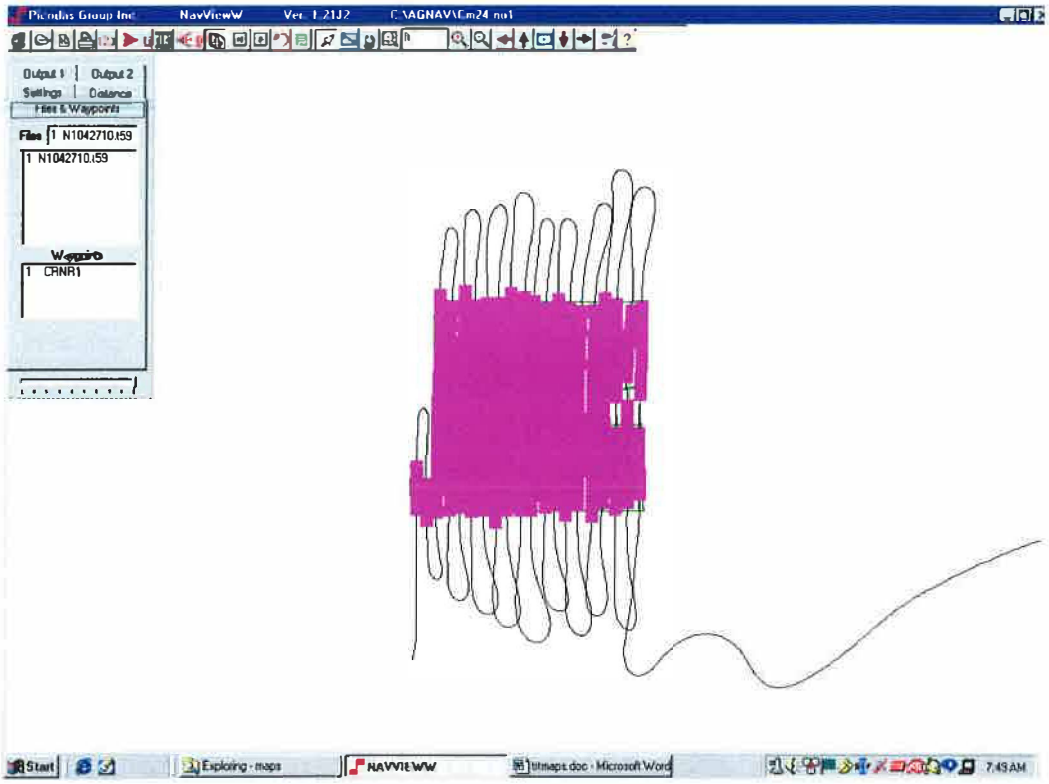
Chesapeake Marshlands NWR Complex Gypsy Moth Suppression Project
Block 51 – single application – April 30, 2001.



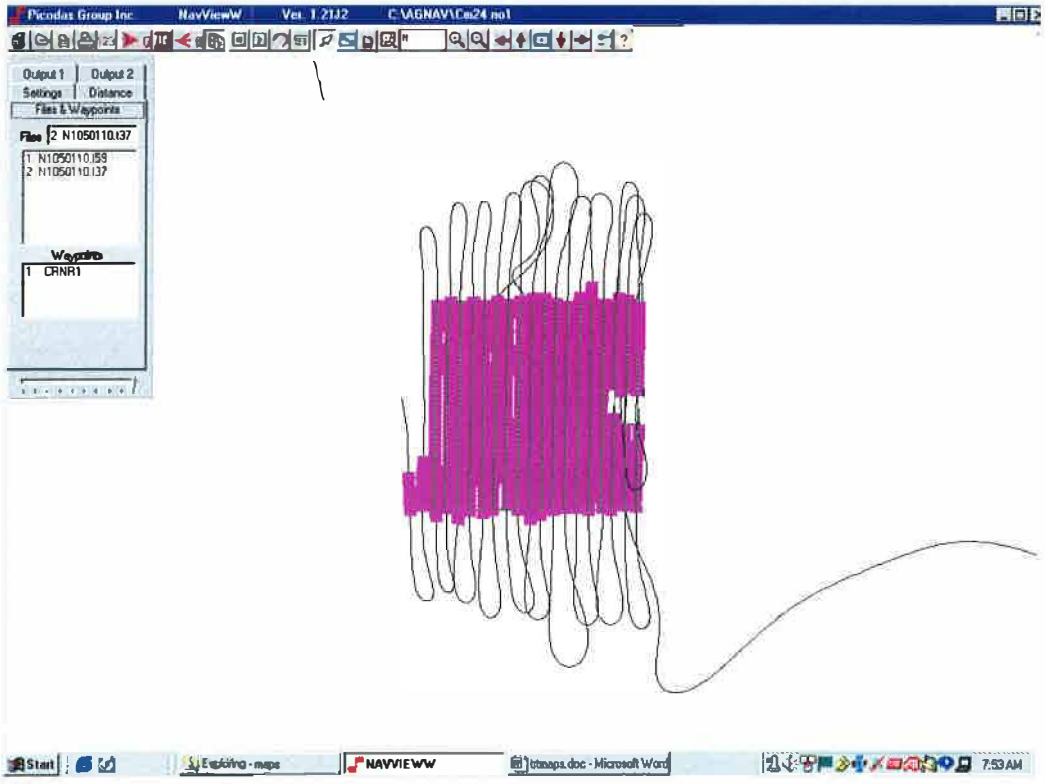
Chesapeake Marshlands NWR Complex Gypsy Moth Suppression Project
Block 69 – single application – April 30, 2001.



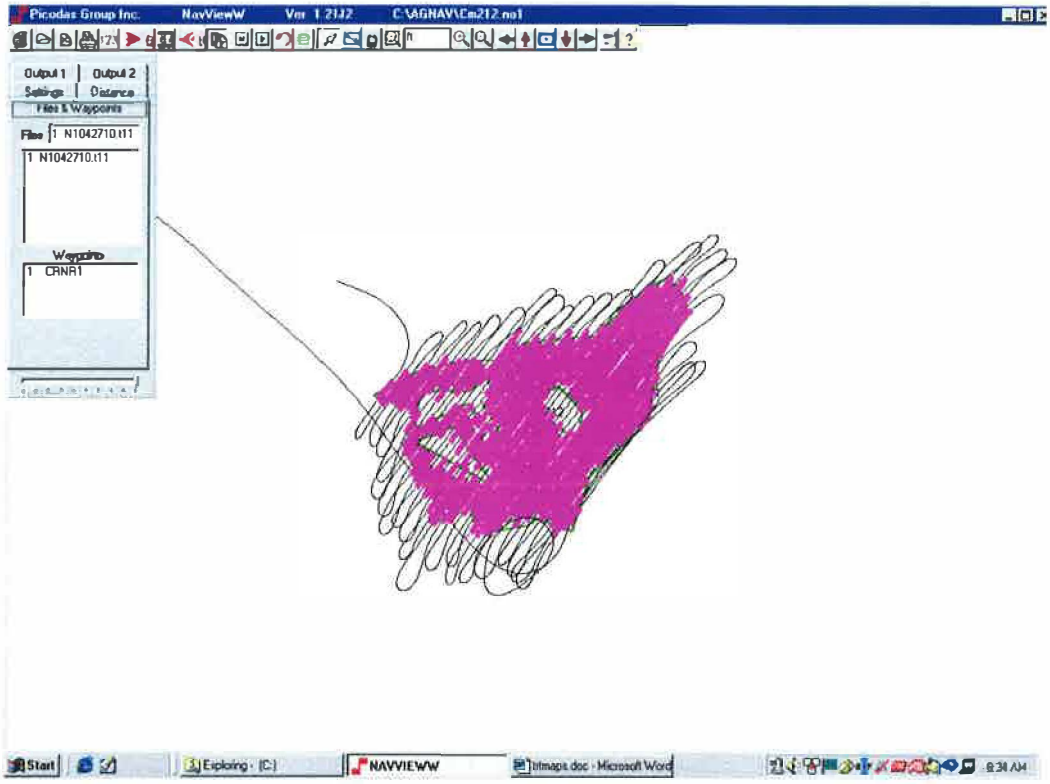
Chesapeake Marshlands NWR Complex Gypsy Moth Suppression Project
Block 4 – first application – April 27, 2001.



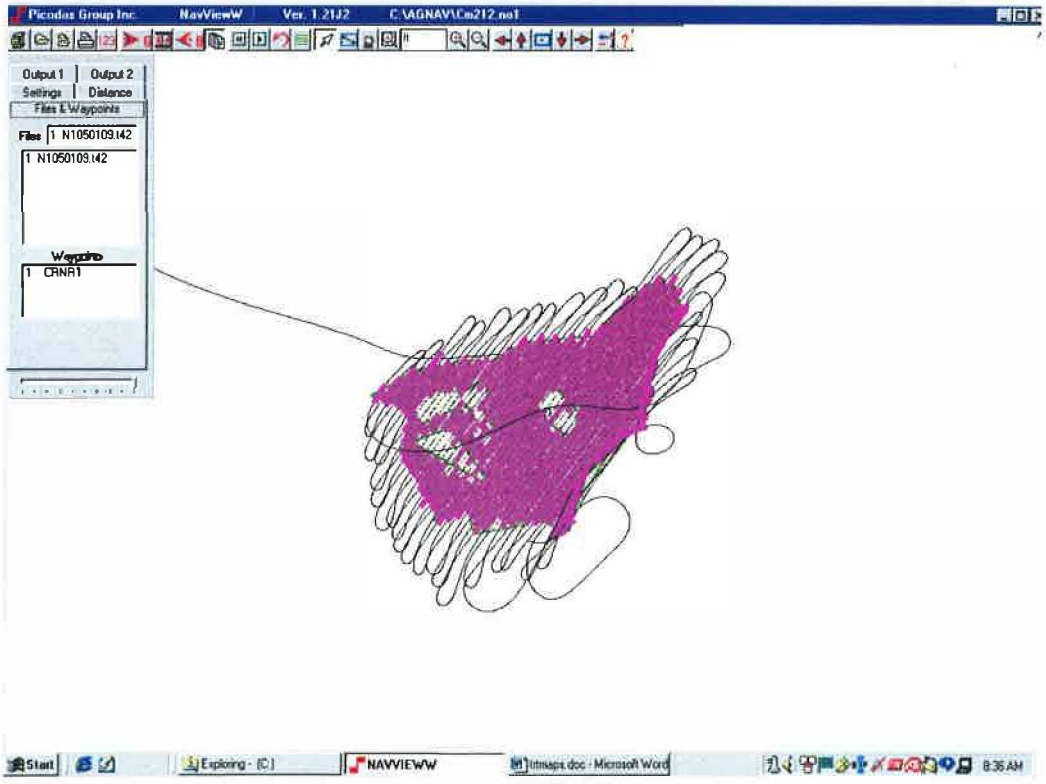
Chesapeake Marshlands NWR Complex Gypsy Moth Suppression Project
Block 4 – second application – May 1, 2001.



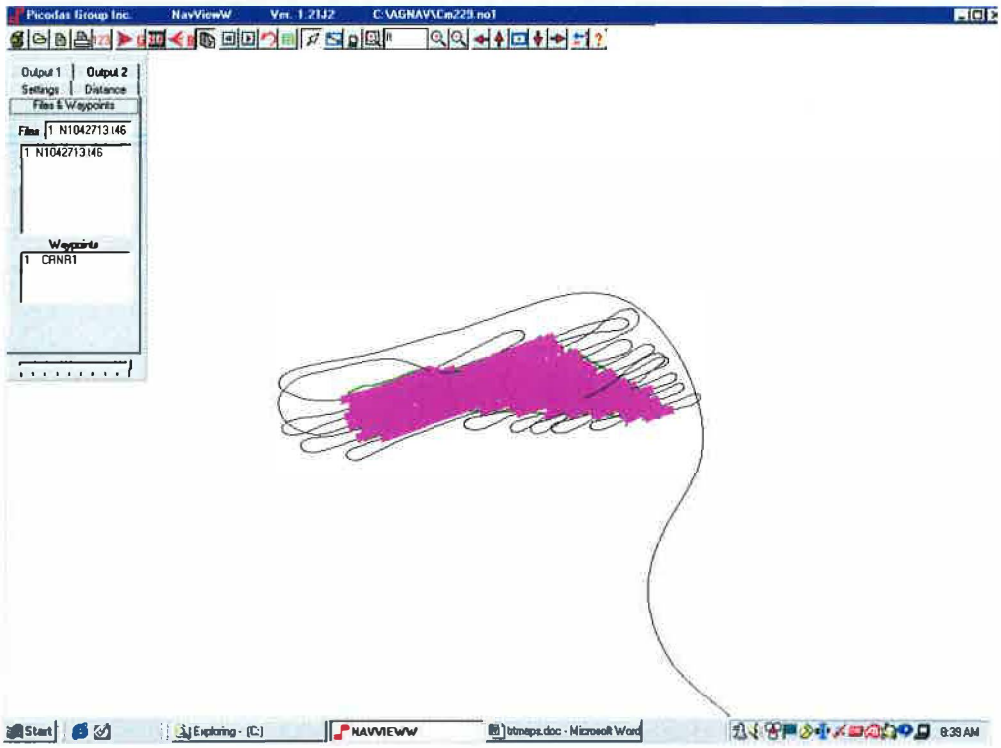
Chesapeake Marshlands NWR Complex Gypsy Moth Suppression Project
Block 12 – first application – April 27, 2001.



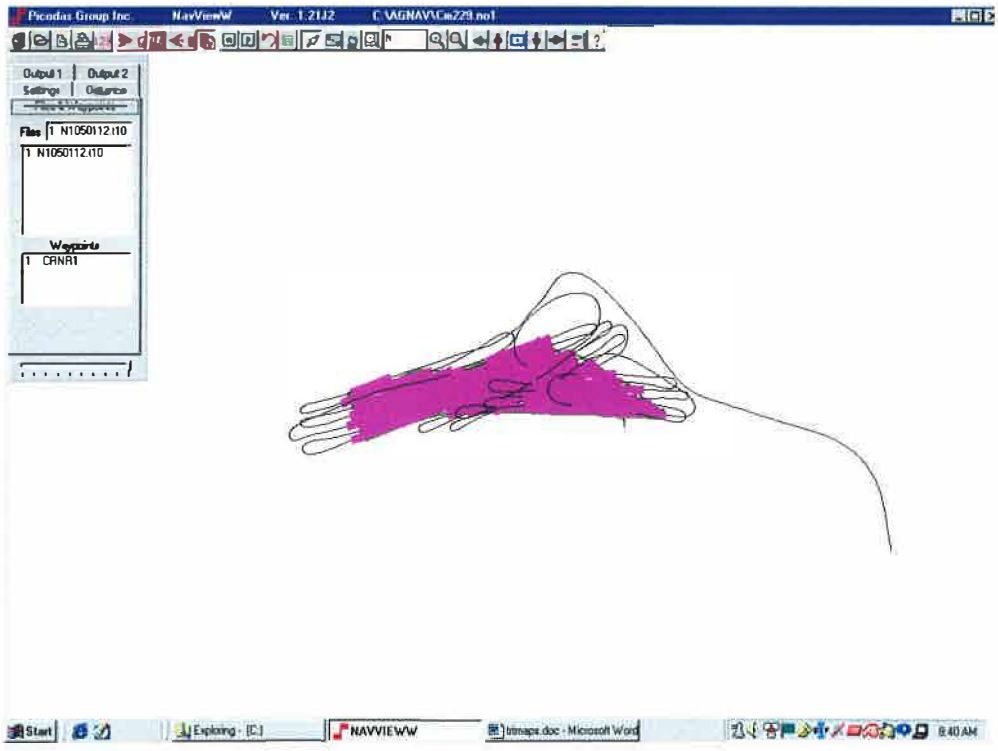
Chesapeake Marshlands NWR Complex Gypsy Moth Suppression Project
Block 12 – second application – May 1, 2001.



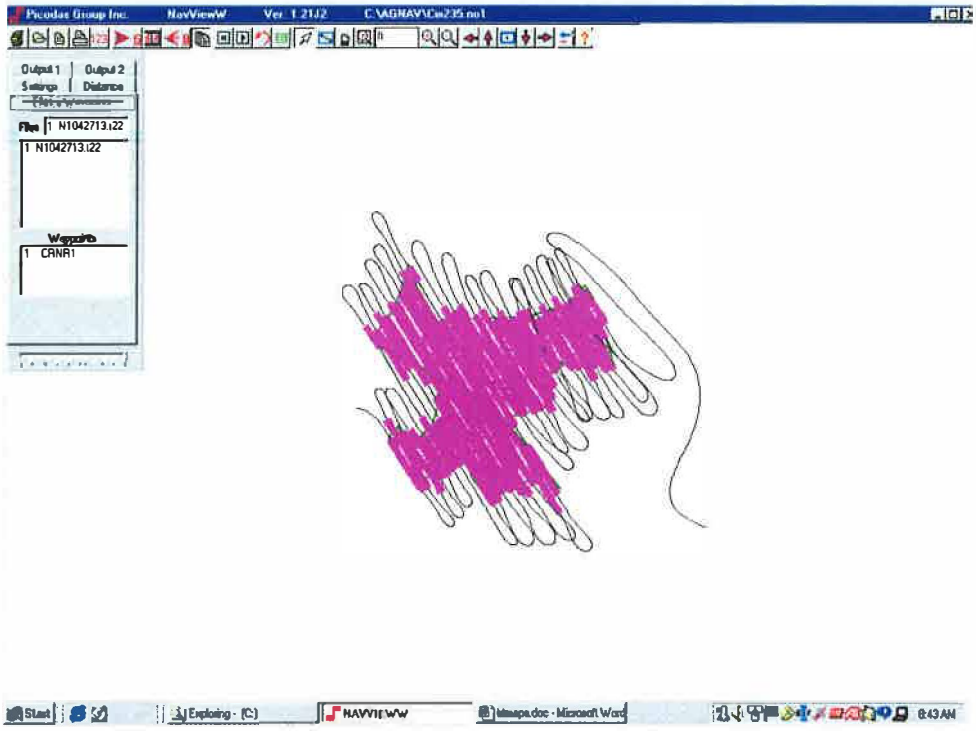
Chesapeake Marshlands NWR Complex Gypsy Moth Suppression Project
Block 29 – first application – April 27, 2001.



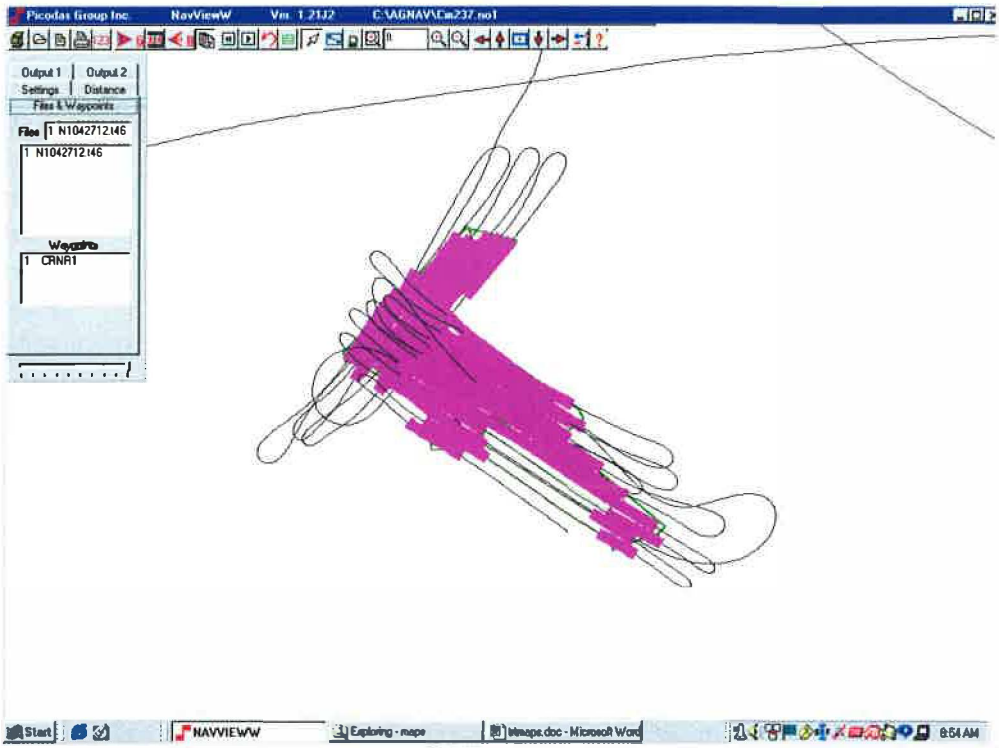
Chesapeake Marshlands NWR Complex Gypsy Moth Suppression Project
Block 29 – second application – May 1, 2001.



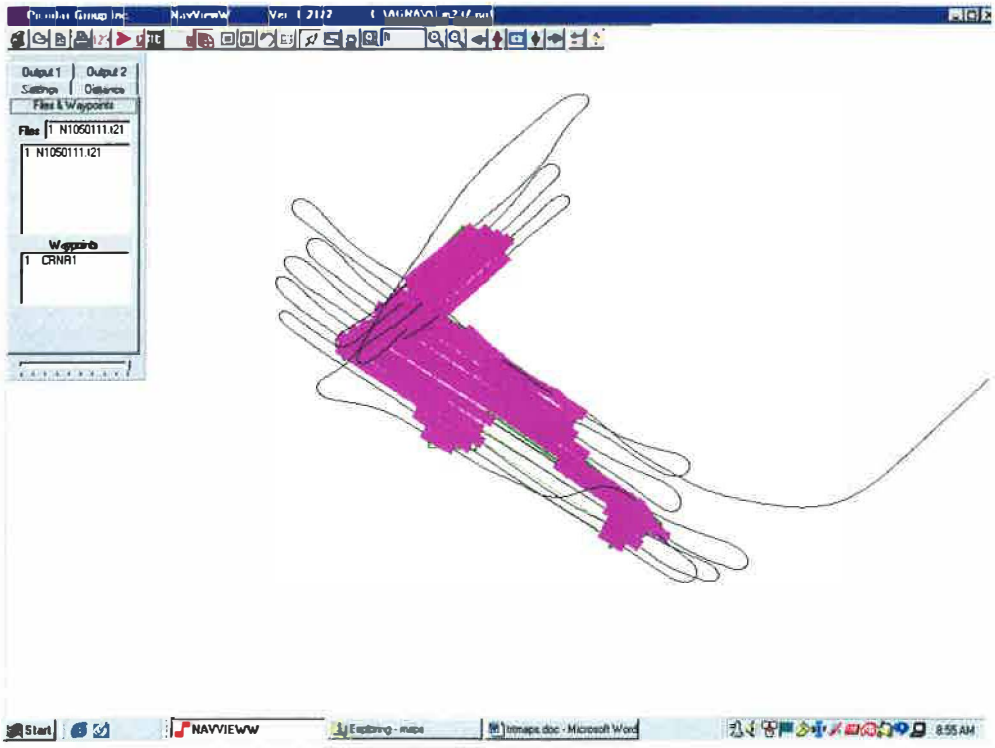
Chesapeake Marshlands NWR Complex Gypsy Moth Suppression Project
Block 35 – first application – April 27, 2001.



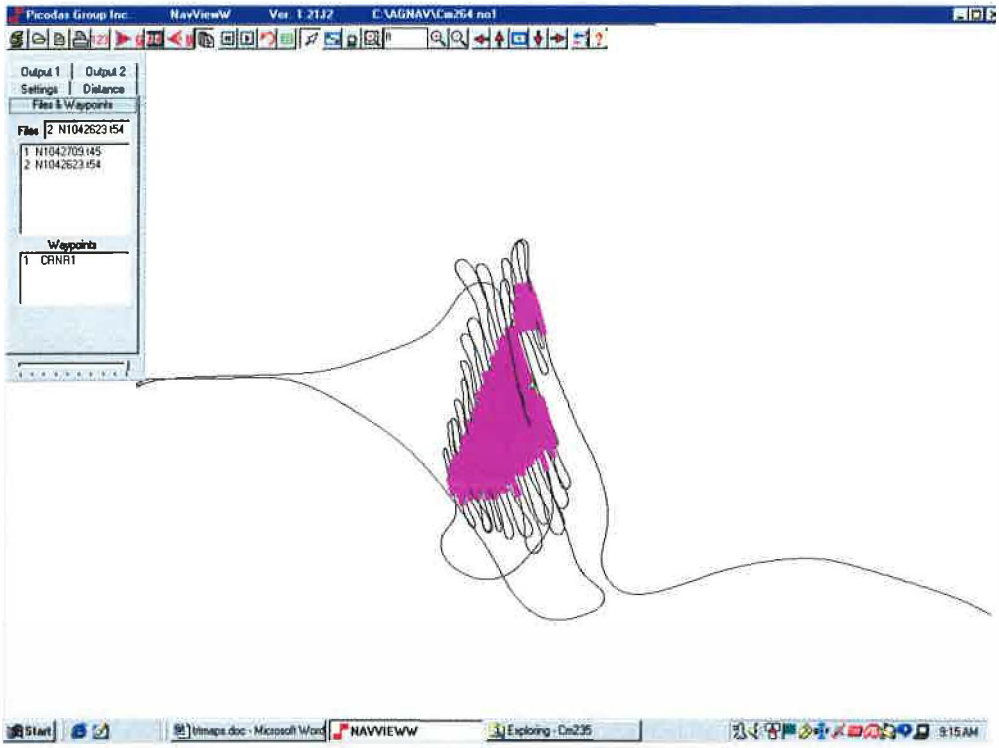
Chesapeake Marshlands NWR Complex Gypsy Moth Suppression Project
Block 37 – first application – April 27, 2001.



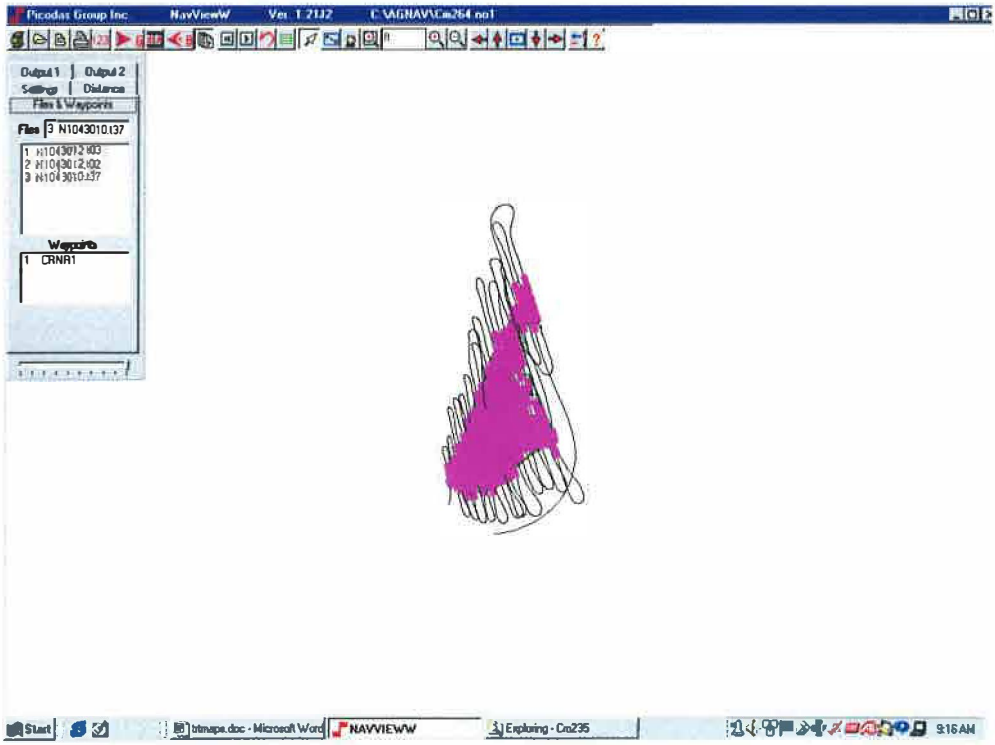
Chesapeake Marshlands NWR Complex Gypsy Moth Suppression Project
Block 37 – second application – May 1, 2001.



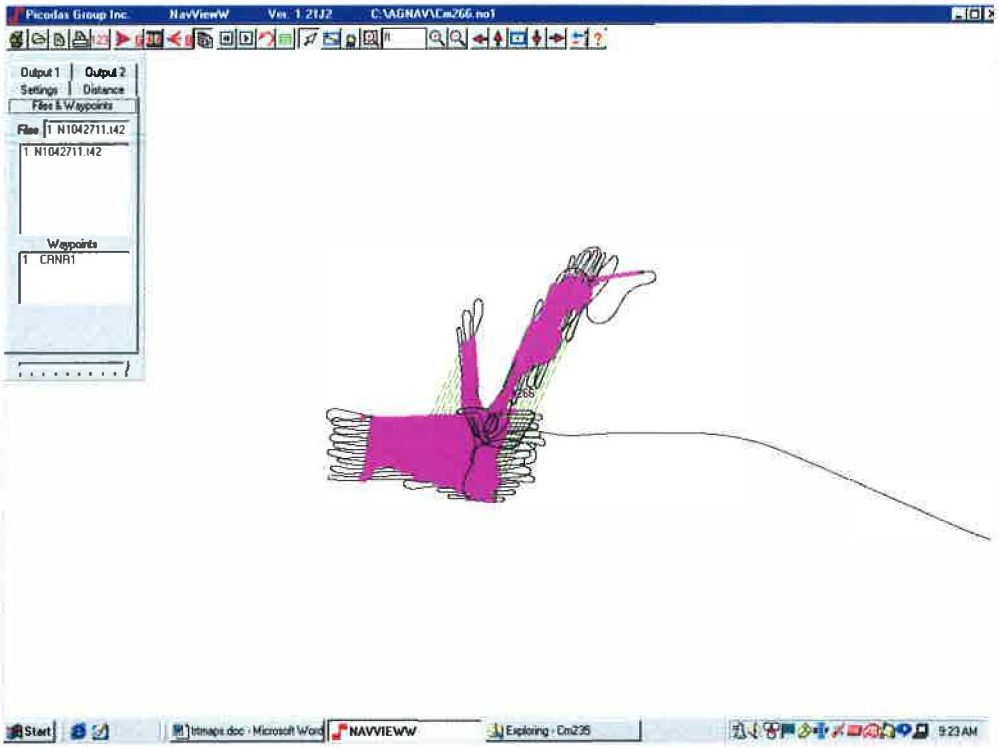
Chesapeake Marshlands NWR Complex Gypsy Moth Suppression Project
Block 64 – first application – April 26 & 27, 2001.



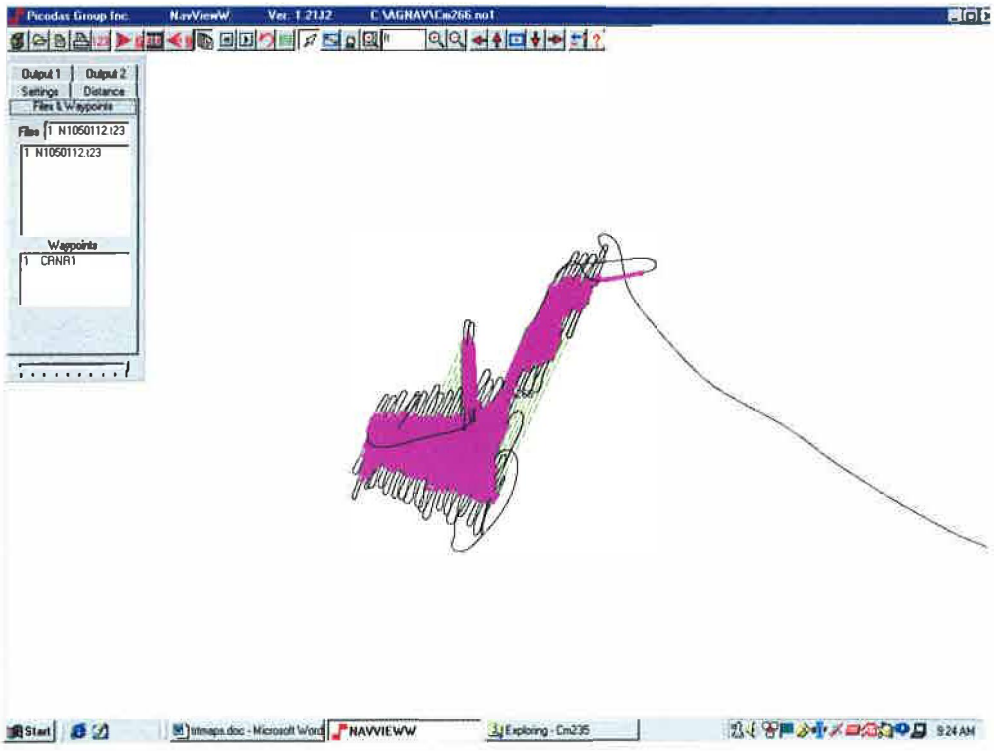
Chesapeake Marshlands NWR Complex Gypsy Moth Suppression Project
Block 64 – second application – April 30, 2001.



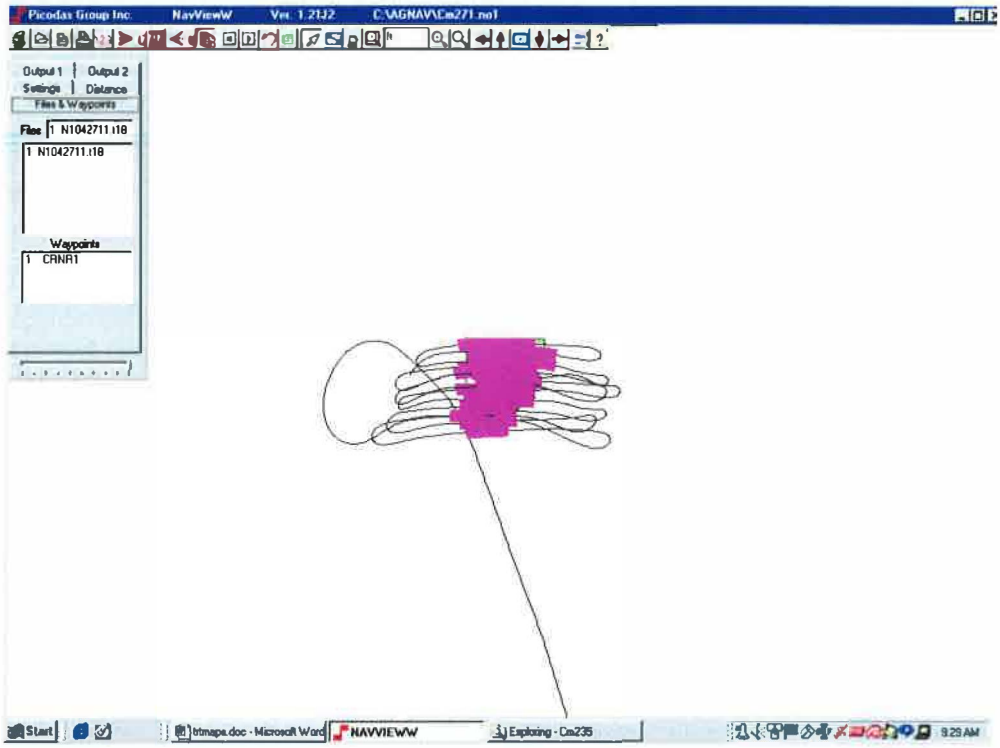
Chesapeake Marshlands NWR Complex Gypsy Moth Suppression Project
Block 66 – first application – April 27, 2001.



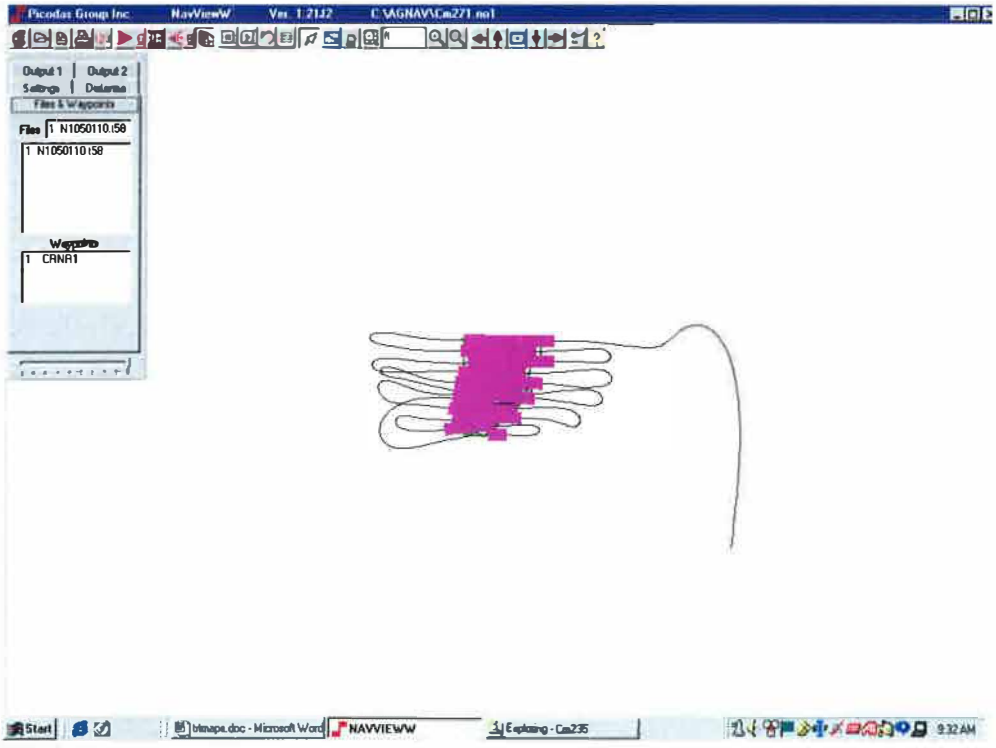
Chesapeake Marshlands NWR Complex Gypsy Moth Suppression Project
Block 66 – second application – May 1, 2001.



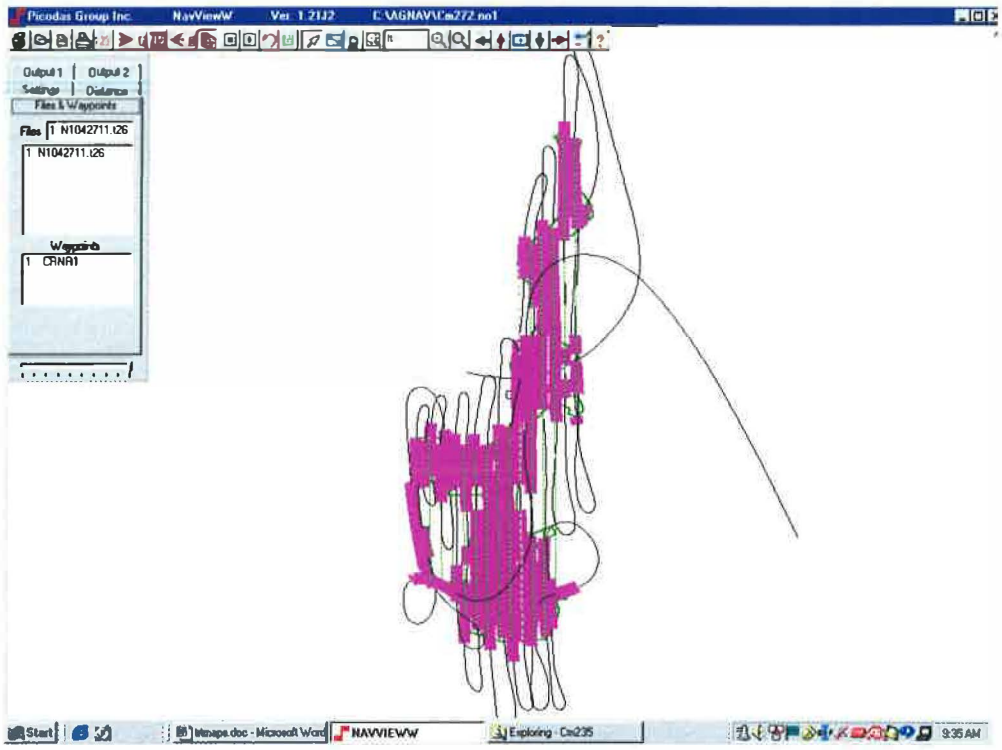
Chesapeake Marshlands NWR Complex Gypsy Moth Suppression Project
Block 71 – first application – April 27, 2001.



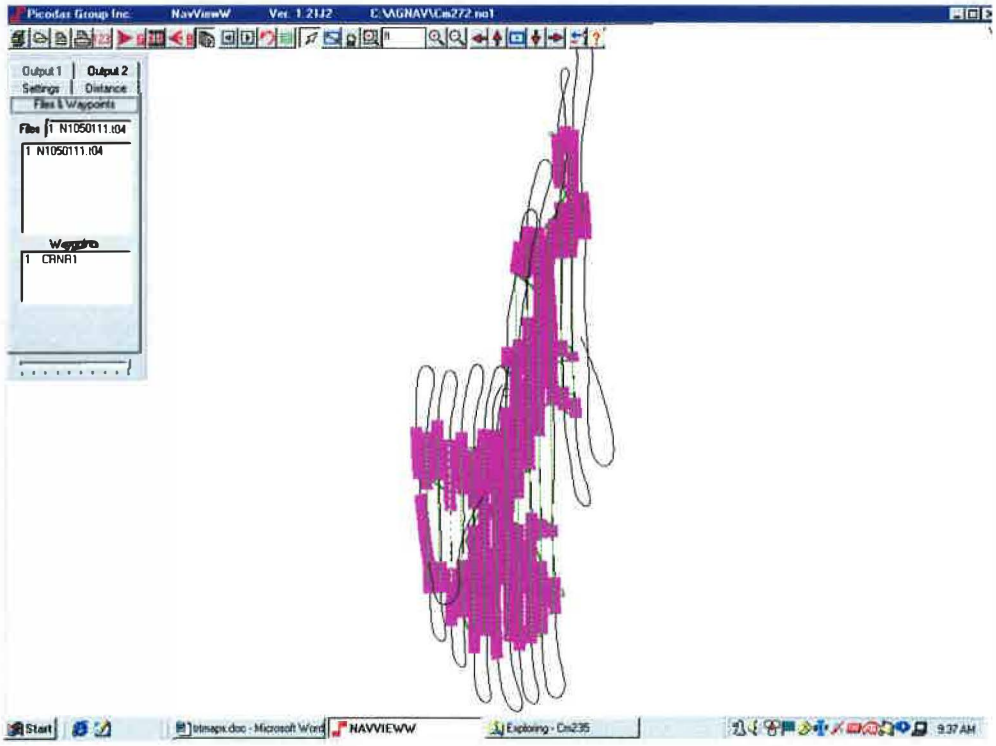
Chesapeake Marshlands NWR Complex Gypsy Moth Suppression Project
Block 71 – second application – May 1, 2001.



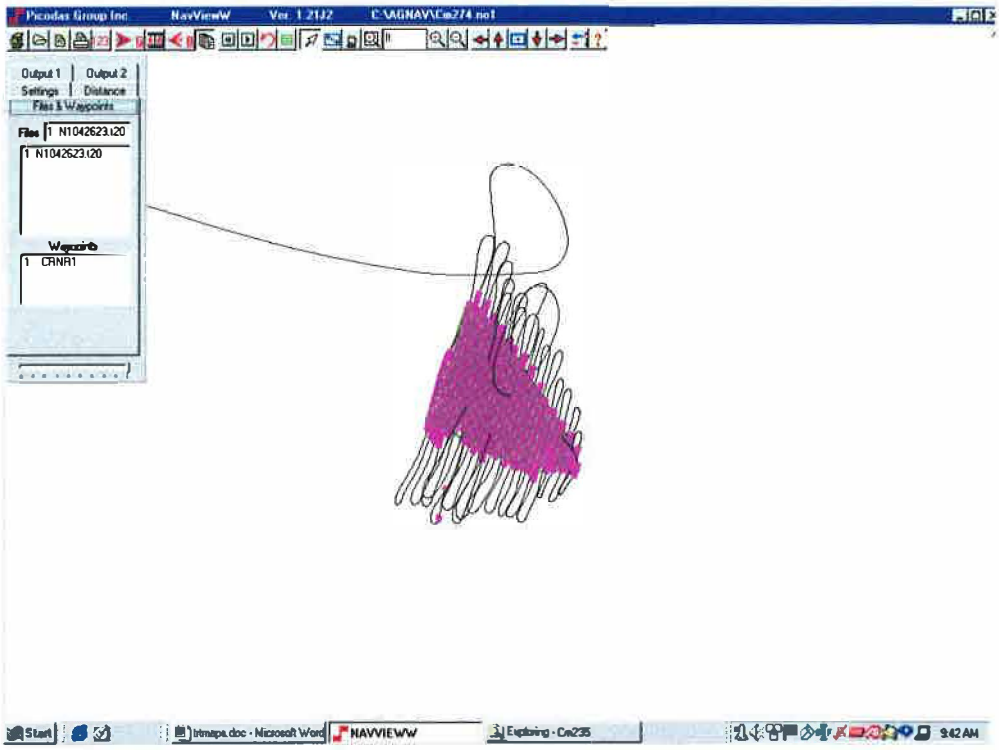
Chesapeake Marshlands NWR Complex Gypsy Moth Suppression Project
Block 72 – first application – April 27, 2001.



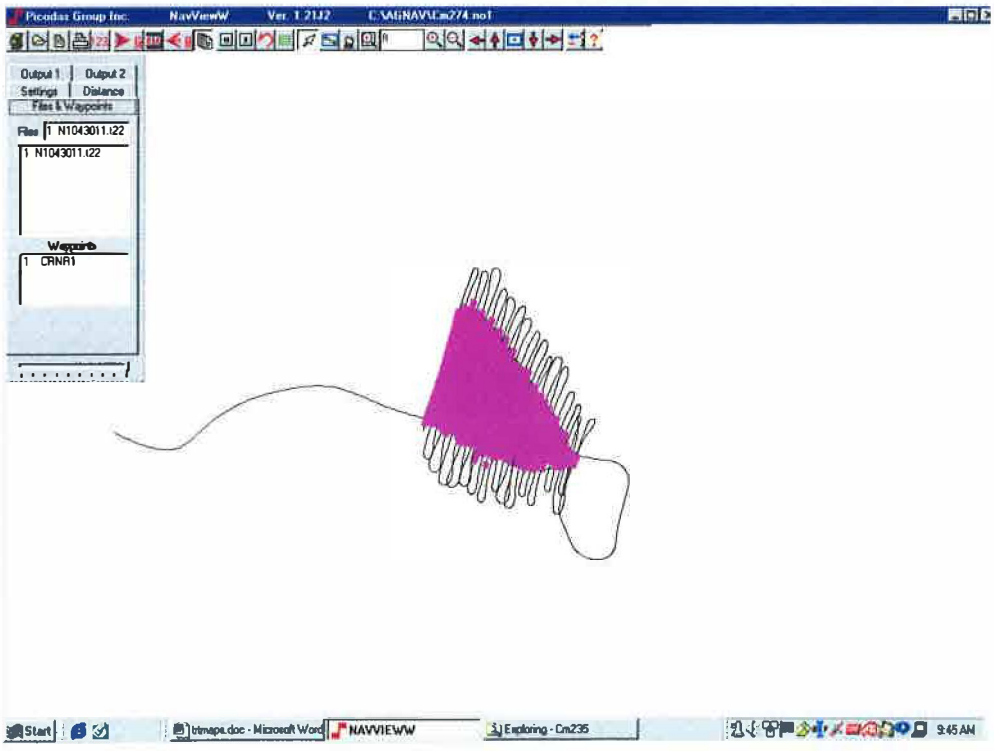
Chesapeake Marshlands NWR Complex Gypsy Moth Suppression Project
Block 72 – second application – May 1, 2001.



Chesapeake Marshlands NWR Complex Gypsy Moth Suppression Project
Block 74 – first application – April 26, 2001.



Chesapeake Marshlands NWR Complex Gypsy Moth Suppression Project
Block 74 – second application – April 30, 2001.



APPENDIX C

DAILY SORTIE REPORTS

DAILY SORTIE REPORT

Project coordinator: Rod Whiteman
Date: 4/26/01
Aircraft ID: N658HA

Location: Chesapeake Marshlands NWR
Pilot: Glenn Martin

Load #	Gallons	Take off time	Return time	Acres treated	Block ID
1	187 *	1925	2000	182.7	74, 64

COMMENTS (Cause of delays, accidents, reason for shut-downs etc.)

* Note - AC returned with 50 gallons onboard. Will finish block 64 on 4/27/01

Treated a total of 182.7 acres

SIGNATURES
Project Coordinator: Rodney L. Whiteman

Contractors Representative:

DAILY SORTIE REPORT

Project coordinator: Rod Whiteman
Date: 4/27/01
Location: Chesapeake Marshland NWR
Aircraft ID: N 658 1+A
Pilot: Glenn Martin

Load #	Gallons	Take off time	Return time	Acres treated	Block ID
1	50	0551	0608	66.7	64
2	267	0612	0656	356	12
3	145	0701	0742	~~193.3~~	4, 71, 72
4	267.1	0751	0850	357	66, 27
5	245.2	0859	1007	327	37, 35, 2973

COMMENTS (Cause of delays, accidents, reason for shut-downs etc.)

Shut down due to low RH (40%)

First application is now complete in all two application blocks

A total of ~~1455.9~~ 1300 acres treated for the day

SIGNATURES
Project Coordinator: Glenn Martin
Contractors Representative: Rodney L. Whiteman

DAILY SORTIE REPORT

Project coordinator: Rod Whiteman
Date: 4/30/01
Location: Chesapeake Marshlands NWR
Aircraft ID: N 659 HA
Pilot: Glenn Martin

Load #	Gallons	Take off time	Return time	Acres treated	Block ID
1	195	0558	0656	260	3, 7, 61, 69, 64
2	167.8	0704	0747	223.3	10, 11, 74

COMMENTS (Cause of delays, accidents, reason for shut-downs etc.)

Treated a total of 483.3 acres for the day

All single app blocks are done.

SIGNATURES
Project Coordinator: Rodney G. Whiteman
Contractors Representative: Glenn Martin

Prepared by USDA, Forest Service, FPM, Morgantown, WV 5/90

DAILY SORTIE REPORT

Project coordinator: Rod Whiteman
Date: 5/04/01
Location: Chesapeake Marshland NWR
Aircraft ID: N658HA
Pilot: Glenn Martin

Load #	Gallons	Take off time	Return time	Acres treated	Block ID
1	267	0548	0634	356	12
2	145	0639	0719	~~193.3~~	4, 71, 72
3	240.8	0726	0826	321	35, 37, 29
4	236.3	0834	0920	315	66

COMMENTS (Cause of delays, accidents, reason for shut-downs etc.)

Treated a total of 1185.3 acres for the day.

Treatment is now complete!

Treated a grand total of 3151.7

SIGNATURES
Project Coordinator: Rodney L Whiteman
Contractors Representative: Glenn Martin

Prepared by USDA, Forest Service, FFM, Morgantown, WV 5/90